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Original Article

Nursing Section

Lifestyle Practices and Knowledge on Prevention and Control of Overweight and Obesity among Adolescents: A Cross-sectional Study

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ABSTRACT

Introduction: Adolescent obesity is a major public health challenge and it is a growing epidemic. Change in diet and physical inactivity are the key factors affecting weight among adolescents. Due to this, the prevalence of non communicable diseases and their risk factors are alarmingly high among them. To tackle this issue, early identification and effective health promotion strategies at a young age need to be adopted. Hence, there is a need for understanding the current trend in overweight and obesity among growing adolescents.

Aim: To identify the lifestyle practices and to determine knowledge on prevention and control of overweight and obesity among overweight and obese adolescents in selected urban high schools at Mangaluru, Dakshina Kannada (D.K.), India.

Materials and Methods: A descriptive cross-sectional study was conducted among adolescents at selected urban high schools of Mangaluru, D K, India. A sample of 360 adolescents were screened to identify the occurrence of overweight and obesity. Body Mass Index (BMI) was computed using the formula, BMI=weight (Kg)/ height (m^2). A total of 65 overweight and obese adolescents were assessed for lifestyle practices and level of knowledge on prevention and control of overweight and obesity. Demographic proforma, a structured knowledge questionnaire, and a self-report lifestyle practice rating scale were used to collect data.

Results: The occurrence of overweight and obesity among adolescents was 18%. According to their BMI status, 9.7% of adolescents were overweight and 8.3% of them were obese. Self-reported lifestyle practice scores depicted that most (86.2%) of the overweight and obese adolescents follow unhealthy lifestyle practices. Majority (66.1%) of the adolescents had only average knowledge on prevention and control of overweight and obesity.

Conclusion: Though a maximum number of adolescents had average knowledge on prevention and control of overweight and obesity, unhealthy lifestyle practices are major risk factors for overweight and obesity among growing adolescents. Overweight and obese adolescents should strictly follow healthy lifestyle practices.

Keywords: Body mass index, Dietary practices, Physical activity, Sleep pattern

INTRODUCTION

According to World Health Organisation (WHO), the prevalence of overweight and obesity among children and adolescents aged 5-19 years has risen dramatically from just 4% in 1976 to over 18% in 2016. This increase in occurrence was similar for both, boys and girls, where 18% girls and 19% boys were overweight [1]. Reduced physical activity, excess screen time, availability of junk food, and varying parenting styles are the major reasons for adolescent overweight and obesity [2-4]. Adolescent overweight and obesity are associated with a higher incidence of premature death and disability in adulthood [5]. A school is a key location for educating students about healthy lifestyles and for putting interventions in place to promote their health [6,7]. To prevent obesity among growing adolescents it is necessary to educate them on good nutrition and physical education at the school level at regular intervals [8-10].

Thus, this pilot study was undertaken to identify the lifestyle practices and knowledge on prevention and control of overweight and obesity among overweight and obese adolescents.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted from 6th January 2020 to 17th March 2020 among adolescents at selected urban high schools of Mangaluru, D.K., India. The participants of this study were in the the age group of 13 to 15 years and were enrolled in 8th standard for the academic year of 2019-2020. In screening phase, a total of three schools were selected through cluster random sampling technique and a total of 360 adolescents were screened for overweight and obesity by calculating BMI. Administrative permission was obtained from school authorities and ethical clearance was obtained from the Institutional Ethical Committee (Yenepoya ethics committee-1 Protocol no. YEC-1 2019/207). The informed consent was sent to the parents through school authorities and assent was obtained from the adolescents. All the participants in the study were informed regarding the details of the study.

Inclusion criteria:

- Adolescent girls and boys aged between 13 to 15 years.
- Those who could read and understand English.
- Adolescents studying in selected urban high schools.
- Adolescents studying in 8th standard class.
- Whose parents gave consent for the participation.

Exclusion criteria:

- Adolescents not willing to participate in the study.
- Adolescents already diagnosed and are on treatment for lifestyle related disorders.

Sample size calculation: The minimum sample size was determined based on available literature, indicating that overweight or obesity affects approximately 6.2% of Mangaluru DK adolescents [11]. Assuming a population proportion of 0.62, z for a 95%, confidence levels of 1.96 and a margin of error of 5%, the estimated sample size was 362 adolescents and rounded off with 360 subjects.

All overweight and obese adolescents were given a demographic proforma, a self-reported lifestyle practice rating scale and a structured knowledge questionnaire on prevention and control of overweight and obesity.

Body Mass Index (BMI)

Adolescents were screened for overweight and obesity by checking their height and weight and calculating BMI using the formula, BMI=weight (Kg)/height (m^2). Height was recorded to the nearest 0.5 cm using the calibrated stadiometer. Weight was recorded using the calibrated Omron weighing scale to the nearest 0.1 kg. The categorisation of the adolescents was done based on the WHO revised consensus guidelines for BMI classification for the Asian population and adolescents were classified as underweight, normal weight, overweight and obese [1].

Self-reported lifestyle practice rating scale: A self-reported lifestyle practice scale was developed by the investigator to assess the lifestyle practice of overweight and obese adolescents [12-16.], which included areas like dietary practices {5-point Likert scale (0-4) having 18 items with maximum score of 72}, physical/leisure activities (4-point Likert scale with 12 items with maximum score of 36 and sleeping patterns 4-point likert scale with 7 items with maximum score of 21). There was total 37 items in the questionnaire stated both positively and negatively, with a maximum score of 129.

Lifestyle practice scores were 65 and <65 graded as unhealthy and 66 and >66 graded as healthy lifestyle practices. Higher score indicates good lifestyle practices. The self-reported lifestyle scale was distributed by the investigator to all the overweight and obese adolescents from the school premises and approximately 25 to 30 minutes were taken by the adolescents to fill the scale. To assess reliability, the English version of the tool was given to 20 adolescents. Internal consistency was obtained by applying Cronbach's Alpha test and the reliability of coefficient obtained was 0.86.

Assessment of adolescent's knowledge on prevention and control of overweight and obesity: A structured knowledge questionnaire on prevention and control of overweight and obesity was developed by the investigator with 34 items to assess the knowledge on prevention and control of overweight and obesity among overweight and obese adolescents [12-16]. Knowledge score was arbitrary graded as: excellent, good, average and poor knowledge [Appendix-1]. The questionnaire was distributed by the investigator to all overweight and obese adolescents from the school premises. The time taken by the subjects to complete questionnaire was approximately 20 minutes. To assess the reliability, the English version of the tool was administered to 20 adolescents. Reliability and internal consistency was obtained by using a split-half test and the reliability co-efficient obtained was 0.78.

STATISTICAL ANALYSIS

The statistical calculations were performed using computer-based statistical software Statistical Package for the Social Sciences (SPSS) version 21.0 and results were expressed in frequency and percentage.

RESULTS

[Table/Fig-1] shows that majority (82.2%) of the total adolescents were in the age group of 13 years and most (74.4%) of them were females. [Table/Fig-2] shows that the prevalence of overweight and obesity among adolescents in the present study was 18%, whereas majority (41.4%) of them was identified as underweight.

Demographic characteristics	n (%)
Age (years)	
3	296 (82.2)
14	52 (14.4)
15	12 (3.4)
Gender	
Male	92 (25.6)
Female	268 (74.4)

[Table/Fig-1]: Demographic characteristics of study group (N=360)*.
The data presented is frequency (n) with percentage in parenthesis (%)

BMI (Kg/m^2)	Categories	n (%)
<18.5	Underweight	149 (41.4)
18.5-22.9	Normal weight/Lean	146 (40.6)
23 to 24.9	Overweight	35 (9.7)
>25	Obese	30 (8.3)

[Table/Fig-2]: Categorisation of the total adolescents based on the BMI (N=360).*
BMI: Body mass index (Kg/m^2); ‡The data presented is frequency (n) with percentage in parenthesis (%)

[Table/Fig-3] depicts that majority (92.3%) of the adolescents were in the age group of 13 years and (93.9%) of them were females. Maximum (89.2%) adolescents belonged to a nuclear family and majority (58.4%) of them had only one sibling.

Total 56 (86.2%) of the overweight and obese adolescents practice unhealthy lifestyle practices [Table/Fig-4].

Demographic variables	No of overweight and obese adolescents	Percentage (%)
Mean age (years)		
13	60	92.3
14	5	7.7
Gender		
Male	4	6.1
Female	61	93.9
Type of family		
Nuclear	58	89.2
Joint/Extended	7	10.8
Presently residing		
With parent	65	100
Number of siblings		
None	14	21.5
One	38	58.4
Two and above	13	20.1
Type of diet		
Vegetarian	5	7.7
Mixed	60	92.3
Family history of obesity or overweight		
Yes	52	80
No	13	20
Do you have a Physical education /activity		
(Games/Sports class) at school?		
Yes	65	100
No	-	-
Are you involved in any sports/games/dance in school?		
Yes	61	93.9
No	4	6.1

[Table/Fig-3]: Distribution of demographic characteristics of overweight and obese adolescents (n=65)*.
Percentage wise distribution of overweight and obese adolescents according to their demographic characteristic; †The data presented is frequency (n) with percentage in parenthesis (%)

Lifestyle practice score	Grade	Frequency (%)
≤65	Unhealthy lifestyle practices	56 (86.2)
≥66	Healthy lifestyle practices	9 (13.8)

[Table/Fig-4]: Distribution of overweight and obese adolescents according to their lifestyle practice scores (n=65).

The lifestyle practice score was higher 12.18±3.14 in the area of sleeping pattern of adolescents and lesser 7.62±1.96 in the area of physical activity of adolescent with overweight and obesity [Table/Fig-5].

Area wise lifestyle practice score	Max score	Mean	SD
Dietary practices	72	36.12	5.57
Physical activity	36	7.62	1.96
Sleeping pattern	21	12.18	3.14

[Table/Fig-5]: Description of area-wise lifestyle practice scores of overweight and obese adolescents (n=65).
SD: Standard deviation

The majority 43 (66.1%) of the adolescents have only average knowledge on prevention and control of overweight and obesity. The mean knowledge score was 18.87±2.50 [Table/Fig-6].

Knowledge score	Grade	Frequency, n (%)
30-34	Excellent	0
20-29	Good	22 (33.9)
10-19	Average	43 (66.1)
1-9	Poor	0

[Table/Fig-6]: Distribution of overweight and obese adolescents according to their knowledge score (n=65).
Percentage wise distribution of overweight and obese adolescents according to their knowledge score. †The data presented is frequency (n) with percentage in parenthesis (%)

DISCUSSION

The results showed that the prevalence of overweight and obesity among adolescent in the present study was 18%. Supporting the findings of the present study, a study conducted by Pedapudi AD et al., showed that the prevalence of overweight/obesity among school-going adolescents in Bengaluru, India was 27.8% [2]. The findings of present study is in concordance with the study of high prevalence of overweight and obesity similar to other metropolitan cities in India; among adolescents attending private schools in urban Mumbai 22.9% [17] and among middle-class adolescents in urban New Delhi (33%) [18]. From all those study findings gives an insight to need for health promotion actions especially among growing adolescents.

Another cross-sectional study was done among 10-18-year-old students in Pondicherry by Prasad RV et al., [19]. The study results showed that the prevalence of overweight and obesity in the study population was 9.7% and 4.3%, respectively [19]. A similar comparative study between government and private schools to find the overweight and obesity among adolescents by Patnaik L et al., the prevalence of overweight/obesity was 27.8% (private schools-45.2%, government schools-10.5%). The BMI, Waist Circumference (WC), Neck Circumference (NC) and Waist-hip ratio were significantly higher among private school students [20].

A similar cross-sectional, observational and questionnaire-based study conducted in urban and rural school going adolescents by Pathak S et al., [21]. Results shows that 188 subjects (89 rural and 99 urban school) school were enrolled. A 17.6% (33), 20.2% (38), 59% (111) and 3.2% (6) children were obese, overweight, normal and underweight, respectively [21].

The results of the present study showed that majority (86.2%) of the adolescents practice unhealthy lifestyle practices. A supported descriptive cross-sectional study was conducted to assess eating habits and patterns, factors affecting food choices and anthropometric measurements among 230 adolescent students at College of Applied Medical Sciences, Hafr Al Batin University by Mohamed AG and Mohammed SS the results showed that 53.04% had a normal BMI and 24.35% were overweight. The BMI had a significant relation with the consumption and snacking patterns among students (p=0.0001) [3].

The results of the current study showed that majority (66.1%) of the study participants have only average knowledge on prevention and control of overweight and obesity. This finding is supported by a community-based, cross-sectional study was carried out in schools of Gujarat city by Bhattacharya PK et al., the results revealed that the prevalence of overweight and obesity were 13.3% and 1.7%, respectively. About 35% of participants did not exhibit adequate knowledge about the impact of physical activity on healthy weight [4].

Till date, various studies have been conducted to identify the prevalence of overweight and obesity among adolescents. Shockingly most of the Indian studies show that the occurrence of overweight and obesity is constantly increasing. Even though the consequence of adolescent obesity is known by all adults, real evidence-based actions have not taken place to curb this growing issue.

Limitation(s)

The study participants were only from 8th standard and thus the results may be generalised to this particular age group and may not be representative of the entire urban adolescent population. Although the outcome variable (overweight/obesity) was measured accurately based on the BMI, the exposure variables were based on self-report and therefore, it was not possible to verify data or accurately measure the quantity of food consumed. Moreover, participants where predominantly females, as one school had only girls which could influence overweight/obesity prevalence in the overall sample. In addition to that, attention was not given to adolescent growth spurts. Associated factors were not analysed in terms of inferential statistics.

CONCLUSION(S)

This study demonstrates a high prevalence of overweight/obesity. Lack of awareness and unhealthy lifestyle practices are noticed among urban school-going adolescents in Mangaluru, India. Adolescents who reported a family history of obesity, were more likely to be overweight or obese as well as adolescents who belongs to nuclear family and type of food consumed are the other noticeable factors. Study suggests that a real involvement of parents along with support and motivation from teachers, and friends may give good results. Family-school focused multiple intervention strategies can be planned and implemented for better results. It is everyone's responsibility to identify what, when, where, and how to begin an action plan to control this global problem and to identify the barriers to interventions in the Indian scenario.

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REFERENCES

[1] WHO (2020) https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight.
[2] Pedapudi AD, Davis RA, Rosenberg P, Koilpillai P, Balasubramanya B, Johnson AR, et al. Overweight and obesity among school-going adolescents in Bengaluru, South India. Indian Journal of Community and Family Medicine. 2020;6(1):134-38.
[3] Mohamed AG, Mohammed SS. Eating pattern among adolescent female student, Applied Medical Sciences College, University of Hafr-Al Batin. Journal of Nursing Education and Practice. 2019;9(4):455-59.
[4] Bhattacharya PK, Gogoi N, Roy A. Prevalence and awareness of obesity and its risk factors among adolescents in two schools in a northeast Indian city. Int J Med Sci Public Health. 2016;5(6):1111-22.
[5] Di Cesare M, Sorić M, Bovet P, Miranda JJ, Bhutta Z, Stevens GA, et al. The epidemiological burden of obesity in childhood: A worldwide epidemic requiring urgent action. BMC Medicine. 2019;17(1):01-20.
[6] Phan HD, Nguyen TN, Bui PL, Pham TT, Doan TV, Nguyen DT, et al. Overweight and obesity among Vietnamese school-aged children: National prevalence estimates based on the World Health Organisation and International Obesity Task Force definition. PloS one. 2020;15(10):e0240459-68.
[7] Lee JH, Chung SJ, Seo WH. Association between self-reported sleep duration and dietary nutrients in Korean adolescents: A population-based study. Children. 2020;(11):221-27.
[8] Burton NW, Kadir MA, Khan A. Physical activity attitudes among adolescents in Bangladesh. Public Health. 2020;179(3):59-65.
[9] Naskar P, Roy S. Obesity and related lifestyle behaviour of adolescent school students in a rural area of West Bengal, India. Journal of Dental and Medical Sciences. 2020;2(6):44-49.
[10] Faulkner MS, Michaliszyn SF. Exercise adherence in Hispanic adolescents with obesity or type 2 diabetes. Journal of Pediatric Nursing. 2020;56(4):07-12.
[11] Hormis N, D'silva F. Obesity among adolescents of urban and rural schools in Mangalore. Nursing Journal of India. 2013;104(3):106.

[12] Naeeni MM, Jafari S, Fouladgar M, Heidari K, Farajzadegan Z, Fakhri M, et al. Nutritional knowledge, practice, and dietary habits among school children and adolescents. International Journal of Preventive Medicine. 2014;5(Suppl 2):S171-76.
[13] Nair TS, Garg S, Gupta VK, Singh MM, Chandra L. Knowledge, attitude and practice of adolescents in Delhi regarding diabetes and hypertension. Ind J Youth Adol Health. 2015;2(4):36-43.
[14] Patrick K, Norman GJ, Calfas KJ, Sallis JF, Zabinski MF, Rupp J, et al. Diet, physical activity and sedentary behaviours as risk factors for overweight in adolescence. Arch Paediatr Adolesc Med. 2004;158(4): 385-90.
[15] Chakma JK, Gupta S. Lifestyle practice and associated risk factors of noncommunicable diseases among the students of Delhi University. International Journal of Health & Allied Sciences. 2017;6(1):20-27.
[16] Sonya J, Ranjani H, Pradeepa R, Mohan V. Obesity Reduction and Awareness and Screening of Noncommunicable Diseases through Group Education in children and adolescents (ORANGE): methodology paper (ORANGE-1). Journal of diabetes science and technology. 2010;4(5):1256-64.
[17] Madan J, Gosavi N, Vora P, Kalra P. Body fat percentage and its correlation with dietary pattern, physical activity and life-style factors in school going children of Mumbai, India. J Obes Metab Res. 2014;1:14-19.
[18] Gupta R, Rasania SK, Acharya A, Bachani D. Socio-demographic correlates of overweight and obesity among adolescents of an urban area of Delhi, India. Indian J Community Health. 2013;25:238-43.
[19] Prasad RV, Bazroy J, Singh Z. Prevalence of overweight and obesity among adolescent students in Pondicherry, South India. International Journal of Nutrition, Pharmacology. Neurological Diseases. 2016;6(2):72-79.
[20] Patnaik L, Pattanaik S, Sahu T, Rao EV. Overweight and obesity among adolescents-A comparative study between government and private schools. Indian Pediatrics. 2015;52(9):779-81.
[21] Pathak S, Modi P, Labana U, Khimyani P, Joshi A, Jadeja R, et al. Prevalence of obesity among urban and rural school going adolescents of Vadodara, India: A comparative study. Int J Contemp Pediatr. 2018;5(4):1355-59.

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APPENDIX-1

Structured Knowledge Questionaire on Prevention and Control of Overweight and Obesity among Adolescents

Instructions: Please read the questions carefully and select the best possible answer by placing a tick mark [√] in the space provided.

Grading of Knowledge Score

1.	**What is overweight/obesity?** a) Excess Body Fat b) Excess Body Muscle c) Excess Body Cells d) Excess Body Protein
2.	**What is the healthy range of BMI among adolescents (teen age)?** a) <18.5 kg/m^2 b) 18.5-22.9 kg/m^2 c) 23.0 -24.9 kg/m^2 d) ≥25 kg/m^2
3.	**What is the most important food of the day that helps to a healthy weight gain?** a) Lunch b) Breakfast c) Brunch d) Dinner
4.	**Which among the following is the main cause of overweight and obesity among adolescents (teen age)?** a) Consumption of more food b) Use of mobile phones c) Loneliness d) Studying for long hours
5.	**Which of the following consumption of food is a risk for overweight/obesity?** a) Coffee b) Tea c) Carbonated soft drinks d) Water
6.	**Which of the following factor leads to overweight/obesity?** a) Recreational activities b) Lack of exercise c) Lack of food d) Sleeping long hours
7.	**What kind of lifestyle can leads to overweight/obesity?** a) Traditional lifestyle b) Healthy lifestyle c) Lazy lifestyle d) None of the above
8.	**Which of the following sleep habits contribute to overweight/obesity?** a) Sound sleep b) Restful sleep c) Lack of sleep d) None of the above
9.	**Which among the following eating habits practice can leads to overweight/obesity?** a) Eating a small quantity of food b) Eating whenever you wish to eat c) Eating the majority of your calories before noon d) Eating more quantity of break fast
10.	**Which of the following is the consequence of overweight/obesity?** a) Low blood pressure b) High blood pressure c) Low blood glucose d) High intra cranial pressure
11.	**Obese children are at risk of developing which of the following medical problems?** a) Alcoholic fatty liver disease b) Bronchitis c) Diabetes Mellitus d) Prolapse of inter-vertebral disc
12.	**Which among the following disease is the obesity associated health complications?** a) Heart diseases b) Skin disorders c) Cough and cold d) Fever
13.	**What emotional and psychosocial complications are common in children and adolescents with obesity?** a) Depression b) Conduct disorder c) Hyperactivity disorder d) Adjustment disorder
14.	Which of the following is a disadvantage of weight gain? a) Low concentration b) Reduction in agility c) Low self-esteem d) Faster reflex

15.	**What are the adverse outcomes for overweight and obese children and teens?** a) Anaemia b) Loose stools c) Type 2 diabetes d) Typhoid
16.	**Which of the following is the best method to prevent overweight and obesity?** a) Healthy Diet and Exercise b) High Fat Diet and Exercise c) Healthy Diet and Lazy Lifestyle d) Low carbohydrate and protein diet
17.	**How much time an adolescent has to spend ideally for moderate physical activity per day?** a) Less than 1/2 hour/day b) 1/2 hour to 1 hour/day c) 1 to 2 hours/day d) More than 2 hours/day
18.	**What is the recommended weight loss per week for an overweight and obese adolescents (teen age)?** a) 0.5 kg to 1 kg b) 1.5 kg to 2.5 kg c) 2.6 kg to 3.5 kg d) 3.6 kg to 4.5 kg
19.	**What is an Aerobic exercise?** a) A physical exercise b) A Meditation c) A sport d) A breathing exercise
20.	**What is the importance of physical activity?** a) To reduce pain b) To slow the developmental process c) To Maintains body weight d) To correct the deformity
21.	**How should you keep yourself physically fit?** Regularly attending drawing classes Regularly watching television Regularly participating indoor and outdoor games Regularly listen to music
22.	**Which of the following activity shouldn't be done immediately after food?** a) Sit and watch television b) Go for exercise c) Go for light entertainment d) Talk with family members
23.	**What would be the consequence of decreased physical activity in life?** a) Lose weight b) Risk of obesity c) Increase the respiratory rate d) Increase the strength of muscles
24.	**Lifestyle activities are a good starting point to reduce weight for obese adolescents's who are inactive. Which of the following is LEAST useful?** a) Walking to and from school. b) Cycling to and from school. c) Taking the stairs instead of lift or elevator daily. d) Feeding the cat or the parrot
25.	**What is balanced diet?** a) A diet which contains food from all the food groups b) A diet which contains only cereals and pulses c) A diet which contains variety of fruits, vegetables and nuts d) A diet which contains cereals, pulses and milk
26.	**What should be the pattern of eating?** a) Eat slowly b) Eat quickly so that food tastes better c) Eat slowly and chew thoroughly d) Eat slowly and drink water while eating
27.	**How often should vegetables be included in the meals?** a) Every day b) Every alternate days c) Weekly twice d) Once in a week
28.	**Why is it important to have breakfast regularly before going to school EXCEPT?** a) To maintain body weight b) To strengthen muscles c) To prevent diseases d) To decrease body pain
29.	**Which of the following is the healthy practice during meals?** a) Eating while watching television b) Eating alone c) Eating together with the family members d) Eating while reading
30.	**Which of the following can help in loss of excess weight?** a) Taking in more of milk and milk products b) Taking in more of fiber rich foods c) Taking in more of fruit juices d) Taking in more of desert items
31.	**How many hours of sleep is required for an adolescent child per day?** a) 8 to 10 hours b) 6 to 8 hours c) <6 hours d) >10 hours
32.	**What is an ideal sleeping pattern for an adolescent (teen age) child?** a) Early to bed and late to rise b) Early to bed and early to rise c) Late to bed and early to rise d) Late to bed and late to rise
33.	**Which of the following is a lifestyle behaviour diseases ?** a) Obesity b) Malaria c) Chicken pox d) None of the above
34.	**The management of childhood obesity includes all of the following except:** a) Dietary changes b) Physical activity c) Family involvement d) Weight loss surgery

Knowledge score	Grade
30-34	Excellent
20-29	Good
10-19	Average
0-9	Poor